

Silicon P-Channel Power MOSFET

General Description:

The HMM520P06 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is SOT-227B, which accords with the RoHS standard.

Features:

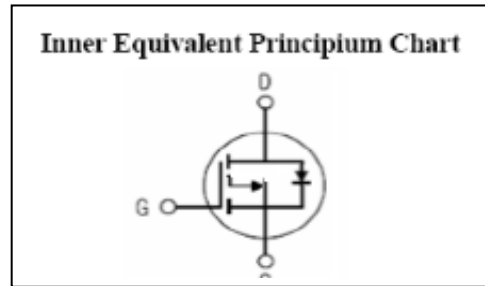
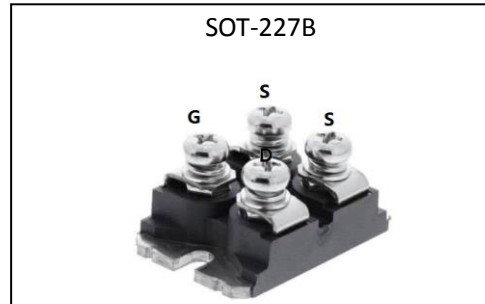
- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications:

Power switching application
 Hard switched and high frequency circuits
 Uninterruptible power supply

Absolute (T_c= 25°C unless otherwise specified):

V _{DSS}	-60	V
I _D	-520	A
P _D	940	W
R _{DS(ON) MAX}	2.0	mΩ



Symbol	Parameter	Rating	Units
V _{DSS}	Drain-to-Source Voltage	-60	V
I _D	Continuous Drain Current	-520	A
	Continuous Drain Current T _c = 100 °C	-280	A
I _{DM} ^{a1}	Pulsed Drain Current(pulse width limited by T _{JM})	-1500	A
V _{GS}	Gate-to-Source Voltage	± 20	V
dv/dt ^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P _D	Power Dissipation	940	W
T _J , T _{stg}	Operating Junction and Storage Temperature Range	175, -55 to 175	°C
T _L	Maximum Temperature for Soldering	300	°C

Electrical Characteristics (T_c = 25 °C unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-60	--	--	V
Δ BV _{DSS} / Δ T _J	Bvdss Temperature Coefficient	I _D =-250uA, Reference 25°C	--	0.06	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} = -60, V _{GS} = 0V, T _a = 25°C	--	--	-30	μA
		V _{DS} = -48V, V _{GS} = 0V, T _a = 125°C	--	--	-3000	
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +20V	--	--	1000	nA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -20V	--	--	-1000	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R _{DS(ON)1}	Drain-to-Source On-Resistance	V _{GS} =-10V, I _D =-260A	--	--	2.0	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-3.0	--	-1.0	V
Pulse width t _p ≤ 380μs, δ ≤ 2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-250A	--	330	--	S
C _{iSS}	Input Capacitance	V _{GS} = 0V V _{DS} = -25V f = 1.0MHz	--	32	--	nF
C _{oss}	Output Capacitance		--	3.1	--	
C _{rSS}	Reverse Transfer Capacitance		--	1.6	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	R _L = 1.5 Ω V _{DD} = -30V V _{GS} = -10V R _G = 1.0Ω	--	200	--	ns
t _r	Rise Time		--	180	--	
t _{d(OFF)}	Turn-Off Delay Time		--	440	--	
t _f	Fall Time		--	300	--	
Q _g	Total Gate Charge	I _D = -250.0A V _{DD} = -30V V _{GS} = -10V	--	760	--	nC
Q _{gs}	Gate to Source Charge		--	192	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	180	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-520	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-1500	A
V_{SD}	Diode Forward Voltage	$I_S = -250A, V_{GS} = 0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = -250A, T_J = 25^\circ C$	--	210	--	ns
Q_{rr}	Reverse Recovery Charge	$dI_F/dt = 100A/\mu s, V_{GS} = 0V$	--	750	--	nC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	0.16	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	0.1	$^\circ C/W$

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

^{a3}: $I_{SD} = -520A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}, \text{Start } T_J = 25^\circ C$

